

**METHOD AND COMPUTER PROGRAM PRODUCT FOR  
PRECISE FEEDBACK DATA GENERATION AND UPDATING FOR  
COMPILE-TIME OPTIMIZATIONS**

*Abstract*

5           A method and computer program product, within an optimizing compiler,  
for precise feedback data generation and updating. The method and computer  
program uses instrumentation and annotation of frequency values to allow  
feedback data to stay current during the multiple optimizations that the program  
code undergoes during compilation. Global propagation of known precise  
10       feedback values are used to replace approximate and unavailable values, and  
global verification of feedback data after optimization to detect discrepancies is  
employed. The method and computer program also provides improved  
instrumentation to anticipate cloning when code is cloned during ceratin compiler  
optimizations and handles inlined procedures. The result is compiled executables  
15       with improved SPECint benchmarks.

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